The bounding public dose impact to an individual is represented by a hypothetical person is located at the site boundary closest to the radiological release. The wind is assumed to blow the radiological release directly towards this individual. The bounding dose impact to a non-involved worker is represented by a hypothetical person located 100 meters (328 feet) downwind of release point. The exposures to the MEOI and to the non-involved worker for each of the cases is presented in Table 4.14.2.1–4.

The MEOI exposure is dominated by the case in which the accidental explosion occurs in a cell using a cell leak area of 42 square inches (i.e., for Configuration 1). The MEOI exposure is dominated by the case in which the accidental explosion occurs in either a bay or a special purpose facility using a cell leak area of 5 square inches (i.e., for Configuration 2). The doses for all accident scenarios are given as committed effective dose equivalents, which mean a 50-year committed dose, not an acute exposure.

The exposure to the maximally exposed non-involved worker is dominated by the case in which the accidental explosion occurs in a cell. The non-involved worker would be expected to receive an exposure of 2300 rem using a cell leak area of 42 square inches and exposure of 600 rem using a cell leak area of 5 square inches. This exposure to the non-involved worker is greater for the cell case because the plume of plutonium exits the cell at ground level and over a longer period of time through the very small gaps under the cell doors. Alternatively, the plume for the bay case or special purpose building case would exit very quickly through the roof. In addition, the cell case plume is less energetic, which would result in higher nearby concentrations. Public risk issues are discussed in detail later in this section as well as in Figure 4.14.1.1–1.

Note that the dose to the MEOI presented here is the bounding consequence for this accident scenario. As illustrated in Table 4.14.2.1–4, this scenario covers the consequences from three facilities, cell, bay, and special purpose buildings. Each facility has a slightly different consequence. Likewise, within each facility, operations on differing weapon systems occur. Each of these different weapon systems would have a different consequence at the site boundary. For example, in the Bay Safety Analysis Report (DOE 1996i), a dose range of 3 to 30 rem is estimated. This difference is dependent on the HE/Pu ratios from different weapon systems. However, the dose estimates in this document are point estimates that bound all weapons related operations at Pantex Plant.

The MEOI dose is a consequence measure, not a risk estimate. The reason for this is because the MEOI is an entirely hypothetical receptor. A reasonable estimate of the frequency that such a receptor is exposed to the scenario requires

TABLE 4.14.2.1–4.—*Representative Doses (REM CEDE) to Maximally Exposed Offsite Individuals and Non-Involved Workers for Individual Cases in Scenario 1*

SCENARIO 1 CASES	MEOI DOSE	NON-INVOLVED WORKER DOSE
Cell Case	49(11)[1]	2,300 (600)[1]
Bay Case	34	34
Special Purpose Building Case	34	34

[1]For 5-square inch cell leak area

Source: Calculations using MACCS model and ERAD model